

WITec Academy

Training Series for Hardware,
Software and Experimental
Methods



Point Your
Skills in a New
Direction

WITec Academy

WITec Academy is a training program that covers all instrument and software operations as well as potential applications of the WITec product line. A course structure with basic and advanced elements addresses not only newcomers but also experienced users of WITec microscope systems. With seminars and extensive hands-on training sessions featuring our latest hardware and software, WITec Academy serves as a forum for comprehensive instruction in a variety of techniques for productive and innovative research using Confocal Raman and Scanning Probe Microscopy.

COURSE NO. COURSE

01

Entry level instrument and software training for Confocal Raman Microscopy

The entry level instrument and software training is for users new to the alpha300 confocal Raman microscope series who require an introduction to the operational principles of the hardware and software components. A detailed description of the measurement process will provide the basis for a hands-on session using WITec test samples. An overview of the WITec software environment will feature prominently in the training as a thorough software knowledge is essential for successful Raman image acquisition.

BLOCK I

Components & Software Environment

The first block of the entry level training will introduce the attendees to all relevant parts of the system and software. This will include a working demonstration of the system, showing the basic alignment and steps necessary to acquire Raman spectra as well as the principles of white light microscopy.

BLOCK II

Introduction to measurement modes and operational principles

In this session, the measurement modes of the system will be introduced. These include acquisition of single spectra, line scans, time series and confocal Raman images in planar and depth scans. The spatial and spectral correlation between the various data objects and the white light images will be illustrated. Additionally, the application of filters to the data sets in order to extract the relevant information from the spectra will be taught as well as some basic software evaluation features.

BLOCK III

Hands-on session

Participants will learn to operate the system by themselves under the guidance of WITec personnel. This will include complete alignment of the system as well as troubleshooting issues. Following this, the participants will perform various measurement tasks on samples supplied by WITec. Attendees are invited to bring their own .wip files as well for the opportunity to ask specific questions regarding their work.

02

Confocal Raman spectroscopy data and image processing with WITec Project

Our software course will cover all aspects of spectral data evaluation and image processing with the WITec Project software. The participants will learn in detail how to process the acquired raw data in order to obtain the most presentable images and graphs for successful publication. Topics relevant to the participant's specific background will be outlined in an "Advanced Individual Data Analysis Tutorial" in which individual measurements will be processed under the guidance of the instructors. Each attendee will work during the course at an individual computer workstation configured with the latest version of the WITec Project software. As the course will mainly cover expert-level features, the participants should have at least a basic knowledge of the WITec Project software environment.

BLOCK I

Basics

The first part of the course will provide a brief introduction to the general concept and user interface of the WITec Project data evaluation and image processing software. Basic features of the various "Tool and Action Windows" will be described and demonstrated sequentially, leading to a fundamental understanding of the software's data and image processing principles.

BLOCK II

Advanced data and image processing modes

The various analytical features and filter options will be explained in detail during this session. The participants will learn how to apply the different filters and "Drop Actions" to a given data set. This will result in a more thorough understanding of the filter and processing algorithms that produce different graph and image files.

BLOCK III

Advanced individual data analysis tutorial

To apply the knowledge of the first two sessions, participants are encouraged to bring their own .wip data sets for a more comprehensive individual analysis under the guidance of the course instructors.

COURSE NO. COURSE

03

Advanced instrument operation training for Confocal Raman Imaging

This one-day training course is intended for experienced users of alpha300 R confocal Raman microscopes and covers expert level features of the instruments and their accessories. During individual hands-on sessions, the participants will have the opportunity to discuss and evaluate the requirements for successful Raman measurements on their own samples. Therefore, participants are encouraged to bring a sample for analysis under the guidance of the instructors. Finally the course will include a “Tips and Tricks” session for the various measurement techniques. Participants should already have a working knowledge of the operation of the system as well as the software.

BLOCK I**Short review of basic instrument features and operational principles**

This first block will review the details of the entry level training. In particular, the basic alignment and operation of the system along with the standard features of the software will be discussed.

BLOCK II**Advanced measurement features**

Advanced modes such as polarization-dependent measurement modes, EMCCD measurements, auto focusing and automated measurement tasks will be demonstrated in this session. Switching between different wavelengths will be described and a short course on objective selection will be included. This will illustrate the effect that different objectives have on collection efficiency, (depth) resolution and chromatic aberration.

BLOCK III**Individual sample analysis**

For this session, participants are encouraged to bring their own samples along for measurement and analysis. The participants will then measure and evaluate the samples by themselves under the guidance of WITec personnel.

BLOCK IV**Tips and tricks**

Participants will learn how to optimize the coupling of the laser into the optical fiber. Additionally, fluorescence issues and how to overcome them will be discussed and demonstrated. Various modes of the CCD cameras, which can be used to enhance the quality of the spectra, will be explored.

04

Advanced instrument operation and software training for AFM and SNOM

This course will include a variety of expert-level software and instrumentation operation topics for the alpha300 AFM and SNOM series. During an individual sample analysis session, the participants will learn how to apply advanced operational procedures to their own samples for superior results. Participants should have at least a basic knowledge of the operation of the system as well as the software.

BLOCK I**Short review of basic instrument features and operational principles**

This first block will review the details of the entry level training and in particular, the basic alignment and operation of the system. Basic software principles will also be reviewed in this session.

BLOCK II**Advanced measurement features**

This session will concentrate on the comparison of various AFM measurement modes with a special focus on the capabilities of Digital Pulsed Force Mode. The correlation between Pulsed Force curves and standard force-distance curves will be demonstrated. Improvement of phase contrast in AC mode AFM images as well as the assignment of material properties from Pulsed Force Mode images will be discussed. AFM-related features of the WITec Project software will be highlighted. In SNOM, the advanced measurement modes will consist of SNOM Fluorescence as well as SNOM Pick-Up Mode (illumination from below and detection through the SNOM tip).

BLOCK III**Individual sample analysis**

Participants are encouraged to bring their own samples for measurement and analysis during this session. They will then measure and evaluate the samples by themselves under the guidance of WITec personnel.

BLOCK IV**Tips and tricks**

General tips and tricks on how to optimize the acquisition of AFM images will be discussed, specifically incorporating the experiences of the attendees. Additionally, this session will include advanced SNOM alignment procedures for cantilevers with very small apertures.



WE TAKE CARE
 WITec uses environmentally friendly printed materials. While this policy is only a small contribution to a healthy environment, we at WITec believe that focusing on details can effect positive change in the world.

A maximum group size of 6 participants for each course guarantees individual attention and thorough instruction. Each course is designed as a full day of training. For some courses we offer multiple dates so the participants can choose the one that best fits in their schedule. The course fee includes lunch, coffee, drinks and a certificate of attendance.

Workshop Series

The WITec Workshop Series includes workshops and seminars held worldwide throughout the year at several locations with changing programs and speakers. For updated information on a workshop in your area, please check the WITec Events website at:
<http://www.witec.de/resources-and-education/workshops>

Individual Onsite Training

For institutions requiring individual onsite group training, WITec can arrange customized training sessions for the various microscope series and relevant topics. Please contact us for detailed information.

The WITec Workshop Series includes workshops and seminars held worldwide throughout the year at several locations with changing programs and speakers. Please check the WITec events website at <http://www.witec.de/en/eventseminars> for updated information on a workshop in your area.

Confocal Raman Imaging Symposium

Our Symposium will provide a detailed theoretical introduction as well as an outline of the operational principles and instrumental configurations relevant to Confocal Raman Imaging. Speakers from academia and industry will cover several aspects of Raman imaging and its fields of application. An extensive demo session gives the participants the opportunity to apply this knowledge. Scientists interested in learning how to chemically identify and image the compounds of a sample at the highest spatial resolution are invited to participate. The final program and a registration form will be posted at:
<http://www.raman-symposium.com/>

WITec Headquarters

WITec GmbH
 Lise-Meitner-Str. 6
 D-89081 Ulm . Germany
 Phone +49 (0) 731 140700
 Fax +49 (0) 731 14070200
info@witec.de
www.witec.de

WITec North America

WITec Instruments Corp.
 130G Market Place Blvd.
 Knoxville . TN 37922 . USA
 Phone 865 984 4445
 Fax 865 984 4441
info@witec-instruments.com
www.witec-instruments.com

WITec South East Asia

WITec Pte. Ltd.
 25 International Business Park
 #03-59A German Centre
 Singapore 609916
 Phone +65 9026 5667
shawn.lee@witec.biz

WITec China

WITec Beijing Representative Office
 Unit 507, Landmark Tower 1
 8 North Dongsanhuan Road
 Beijing, PRC., 100004
 Phone +86 (0) 10 6590 0577
Info.China@witec-instruments.com
www.witec.de/cn

WITec Japan

WITec K.K.
 Mita 2-3227, Chome, Tama-ku,
 Kawasaki-shi, Kanagawa-ken 214-0034
 Japan
 Phone +81 44 819 7773
info@witec.jp
www.witec.de/jp